

**Software-Enabled Consumer Products Study  
U.S. Copyright Office Docket No. 2015-6**

**Comments of the Center for Democracy & Technology**

## **Introduction**

The Center for Democracy & Technology (CDT) thanks the Copyright Office for the opportunity to submit these comments in response to its inquiry into copyright law’s influence on software-enabled devices (and *vice versa*), and thanks Senators Leahy and Grassley for prompting that inquiry.<sup>1</sup> While copyright protection incentivizes the creation and distribution of software, the increasing ubiquity of software-enabled and network devices raises fundamental questions over that protection’s consistency with legitimate user expectations regarding ownership of those devices and the freedom to explore and modify their inner workings. Legislative change ultimately may be required to harmonize copyright protections and limitations with users’ legitimate expectations. In the near term, improved clarity around both the scope of copyright protection and the terms of software licenses would benefit rightsholders, users, and the individuals and entities seeking to pursue new business models, improve innovative devices, or simply figure out how the latest technology works.

### **I. Provisions of copyright law that are implicated by the ubiquity of copyrighted software in devices**

As the Office observes in its Notice, the provisions of the Copyright Act that raise questions around the scope of copyright protection for software extend well beyond those provisions that deal with software expressly.<sup>2</sup> Other than Section 1201, which is excluded from the present inquiry, the idea/expression dichotomy in Section 102(b) and the first-sale doctrine in Section 109 are perhaps the two most prominent focal points of recent discussions and calls for clarification from both Congress and the courts.

**Section 102(b).** As noted by the Federal Circuit in *Oracle America, Inc. v. Google Inc.*, “[c]ircuit courts have struggled with, and disagree over, the tests to be employed when attempting to draw the line between what is protectable expression and what is not” when assessing a software owner’s infringement claim.<sup>3</sup> Google’s unsuccessful petition for certiorari in that case similarly noted that the circuits courts have taken widely divergent approaches with respect to whether or to what extent the

---

<sup>1</sup> Letter from Sen. Charles E. Grassley, Chairman, Senate Committee on the Judiciary, and Sen. Patrick Leahy, Ranking Member, Senate Committee on the Judiciary, to Maria A. Pallante, Register of Copyrights, U.S. Copyright Office, at 1 (Oct. 22, 2015), *available at* <http://www.copyright.gov/policy/software>.

<sup>2</sup> Software-Enabled Consumer Products Study: Notice and Request for Public Comments, 80 Fed. Reg. 77688, 77672 (Dec. 15, 2015) (“Notice”) (citing Sections 102(b), 107, 109, 117, and related doctrines).

<sup>3</sup> *Oracle Am., Inc. v. Google Inc.*, 750 F.3d 1339, 1357 (Fed. Cir. 2015).

idea/expression dichotomy prevents or limits copyright protection for systems and methods of operations in computer programs, characterizing the current state of the law as one of “disarray”.<sup>4</sup>

The particular type of code at issue in *Oracle v. Google*, the application programming interface (API), has particular relevance to software-enabled devices. An API is a standard method or recipe that a software system provides in order to allow other developers to build rich applications with it. For example, Google Maps provides an API that allows software developers to incorporate sophisticated mapping tools into their own software applications without having to directly license the underlying code from Google. APIs facilitate the creation of new and innovative applications that increase the value and utility of ubiquitous consumer devices such as smartphones and tablet computers. APIs also make it easier for professional programmers and even novice coders to write interoperable software that can work on multiple devices and software platforms.

Uncertainty around the copyrightability of APIs may deter innovation in software-enabled devices. Even when there are technological alternatives to using an API, some device manufacturers may insist on using a particular API to perform specific functions.<sup>5</sup> This potential “lock-in” effect, where users and developers depend on a particular software platform or API to interact with a particular device, may give rightsholders undue control over interoperability or the development of new applications.

The court in *Oracle* deemed “interoperability concerns” to be relevant to fair use analysis rather than to the question of copyrightability.<sup>6</sup> That view is by no means uniform across circuits and the *Oracle* case itself shows the risk of making Section 107’s protection for fair use the sole load-bearing provision of the Act for determining whether copying code elements solely for purposes of interoperability lead to infringement liability. Although judicial decisions have increased clarity and certainty around some applications of the fair use doctrine, it remains a multi-factored and fact-dependent inquiry. In *Oracle*’s dispute with Google, the jury deadlocked over the question of fair use.<sup>7</sup> Developers may be reluctant to risk a negative fair use determination in choosing whether to make their applications interoperable with a particular device. Further clarity regarding both copyright protection for APIs and applicable exceptions is needed.

**Section 109.** Another major source of uncertainty for programmers and users is the applicability of the first-sale doctrine – the limitation of a rightsholder’s control over distribution of lawfully made copies of a work to their first sale or transfer – to software and software-enabled devices. The Commerce Department Internet Policy Task Force did not seek comment on the first-sale doctrine’s relation to consumer products in its recent white paper on remixes, first sale and statutory damages. Nonetheless, “[s]everal comments and roundtable participants expressed concern over the possibility that manufacturers might assert that software embedded in consumer devices is only licensed and may not

---

<sup>4</sup> Petition for writ of certiorari at 13, *Google, Inc. v. Oracle Am., Inc.*, (Oct. 6, 2014) (No. 14-410).

<sup>5</sup> See, e.g., Apple Store Review Guideline 5.1 (requiring use of the Apple Push Notification API for push notifications) <https://developer.apple.com/app-store/review/guidelines/>.

<sup>6</sup> *Oracle*, 750 F.3d at 1353.

<sup>7</sup> *Id.* at 1347.

be resold as part of a sale of the device.”<sup>8</sup> Although the Commerce Department noted no cited instance of licensing restrictions encumbering the resale of consumer devices, some software developers grant only non-transferable licenses that allow installation solely on a specific device for a specific purpose.<sup>9</sup> Others device makers use licensing agreements to require recertification fees or other steps in order for the subsequent purchaser to use the device.<sup>10</sup>

Concerns over potential limitations of the first sale doctrine in the software context flow in part from the difficulty in distinguishing licenses from sales. Shrink- or click-wrap end-user license agreements (EULAs) can limit copying or use of software embedded in consumer devices and other material objects in ways that users may not expect. As the Ninth Circuit noted in *Apple, Inc. v. Psystar Corp.*, “licensing agreements, rather than sales, have become the predominate form of the transfer of rights to use copyrighted software material.”<sup>11</sup> The rightsholder’s designation of a particular transfer as a license rather than a sale does not necessarily control under the Ninth Circuit’s test in *Vernor v. Autodesk, Inc.*, but it receives substantial weight.<sup>12</sup> This is problematic in cases where a downstream purchaser may be unaware of a license term restricting resale or other exploitation of a lawfully made copy of software embedded in a device.

The significant uncertainty for users in distinguishing licenses from sales has implications outside of the first sale doctrine. In the Office’s most recent triennial review of proposed exemptions to anti-circumvention liability under Section 1201, certain device makers – particularly vehicle manufacturers – were emphatic that “[a] vehicle owner does not acquire copyrights for software in the vehicle, and cannot properly be considered an ‘owner’ of the vehicle software.”<sup>13</sup> Licensing restrictions present unique challenges for purchasers of devices containing many software components licensed from different sources. An automobile’s collision avoidance system, GPS, and entertainment system may all be subject to licenses between software vendors and either the manufacturer or the automobile owner.<sup>14</sup> Even when the original owner is aware of the licensing terms, a subsequent owner may not be although she is subject to them. As one scholar has noted, “[a] magical aspect of

---

<sup>8</sup> Dep’t. of Commerce Internet Policy Task Force, White Paper on Remixes, First Sale, and Statutory Damages, 50 (Jan. 2016).

<sup>9</sup> End User License Agreement for NetApp, Inc. Software (granting a “non-exclusive, non-transferable, worldwide, limited license, without right of sublicense, to install and use the Software in object code form only on a host computer or storage controller for Your internal business use), available at [http://mysupport.netapp.com/NOW/public/apbu/oemcp/apbu\\_lic.cgi?dest=/public/apbu/oemcp/09.01.B5.07/Linux\\_RDAC\\_0901B507\\_readme.txt](http://mysupport.netapp.com/NOW/public/apbu/oemcp/apbu_lic.cgi?dest=/public/apbu/oemcp/09.01.B5.07/Linux_RDAC_0901B507_readme.txt).

<sup>10</sup> Palo Alto Networks, *Secondary Market Policy* (listing requirements that must be met “[b]efore hardware devices that are purchased on the secondary market may be licensed for use”), available at <https://www.paloaltonetworks.com/support/support-policies/secondary-market-policy.html>.

<sup>11</sup> *Apple, Inc. v. Psystar Corp.*, 658 F.3d 1150, 1155 (9<sup>th</sup> Cir. 2011).

<sup>12</sup> *Vernor v. Autodesk, Inc.*, 621 F.3d 1102, 1111 (9<sup>th</sup> Cir. 2010).

<sup>13</sup> See John Deere Class 21 Opp’n at 5, available at [http://copyright.gov/1201/2015/comments-032715/class%2021/John\\_Deere\\_Class21\\_1201\\_2014.pdf](http://copyright.gov/1201/2015/comments-032715/class%2021/John_Deere_Class21_1201_2014.pdf).

<sup>14</sup> *Id.*

intellectual property is the way that rights can pervade a system without the need for the rights-holder to physically engage with the supply chain.”<sup>15</sup> Copyright law may need further clarity of the rightsholder’s ability to restrict not only resale but also unlicensed uses of software on devices purchased on the secondary market.

## II. Copyright law’s potentiation to enable or frustrate legitimate uses of software-enabled devices

Users do not inherently distinguish between software-enabled devices and other devices they may own. When a user purchases a device, she likely assumes that she may use it for any purposes of which it is capable, repair it, alter it, sell it, or just give it away. Copyright’s most significant influence on user engagement with software-enabled devices may be to limit which of these otherwise unremarkable activities are legitimate either under the terms of the Act or under the licenses that control access to and use of the software on that device.

The Act contains specific copyright limitations to facilitate some of these activities, such as Section 117(c)’s exception for machine maintenance or repair. However, those limitations are strictly defined. Section 117 defines “maintenance” as “the servicing of the machine in order to make it work in accordance with its original specifications and any changes to those specifications authorized for that machine.”<sup>16</sup> Thus, *unauthorized* changes may fall outside the exceptions for maintenance and repair. The Act may therefore recognize a limited right to repair but not a freedom to tinker or research. Even the right to repair may be further clouded by anti-circumvention liability under Section 1201.

Legitimate uses sanctioned by the Act can be frustrated by license terms for the software embedded in devices. For example, courts have recognized reverse engineering, when done for legitimate purposes, as fair use under Section 107 as well as protected activity under specific exemptions in Sections 906 and 1201(f) of the Act.<sup>17</sup> However, some software licenses expressly prohibit customers from reverse engineering software code, even to look for or patch vulnerabilities in the code.<sup>18</sup> In some cases, merely using the device binds the user to terms preventing reverse engineering.<sup>19</sup> Thus, even where

---

<sup>15</sup> Dennis Crouch, *YODA: You Own Devices Act*, Patently-O (Sept. 25, 2014) available at <http://patentlyo.com/patent/2014/09/yoda-devices-act.html>.

<sup>16</sup> 17 U.S.C. § 117(d)(1), (2).

<sup>17</sup> *Bowers v. Baystate Techs.*, 320 F.3d 1317, 1325 (Fed. Cir. 2003).

<sup>18</sup> See Sean Gallagher, “Oracle security chief to customers: Stop checking our code for vulnerabilities,” *Ars Technica* (Aug. 11, 2015), available at <http://arstechnica.com/information-technology/2015/08/oracle-security-chief-to-customers-stop-checking-our-code-for-vulnerabilities/>;

<sup>19</sup> See Garmin Software License Agreement (“By using this device you agree . . . not to decompile, disassemble, modify, reserve assemble, reverse engineer, or reduce to human readable form the Software or any part thereof . . .”), available at <https://www8.garmin.com/manuals/webhelp/vivosmart/EN-US/GUID-31E7CFE8-6348-49BC-9561-742127047774.html>

copyright law seeks to facilitate legitimate interactions with software-enabled devices, software licenses may yet frustrate them.

### III. Potential changes in copyright law that could improve the landscape for software-enabled devices

**Proposed legislation.** The Notice cites two recent legislative initiatives that address the tension created when consumers own a device but find their uses of and ability to transfer the software embedded within it limited by a licensing agreement.<sup>20</sup> The Unlocking Technology Act of 2015 would amend Section 117 to allow mobile device owners to adapt their devices' software or firmware to enable network switching,<sup>21</sup> freeing them from being locked in to a single network and invigorating the secondary market for mobile devices. The You Own Devices Act of 2014 (YODA) would amend Section 109 of the Copyright Act to grant consumers the unwaivable right to transfer the copies of software responsible for operating their devices, as well as the right to receive updates and security patches for that software.<sup>22</sup>

These proposals more closely align the law with consumer expectations of device ownership. The Unlocking Technology Act merely allows users to copy and adapt the software that controls their mobile communications devices to allow those devices to connect to the mobile communications networks of the consumers' choosing. Without that functionality, the value of a mobile communications device purchased in the secondary market is extremely limited. Similarly, YODA requires only that the transfer of software-enabled devices from the original purchaser to a subsequent owner carries with it the transfer of the software that enables the device to function. Although they concern slightly different (and in the case of the Unlocking Technology Act, narrower) subject matter, both proposals would increase the value and utility of software-enabled devices for end users.

**Statutory damages.** Aside from potential changes to substantive copyright law, further clarity with respect to the application of statutory damages for infringement of software would lessen the risk that disproportionate liability prevents users or third parties forego beneficial uses or modifications of software-enabled devices. After surveying stakeholder input on the unpredictability and potential excessiveness of statutory damages awards, the Commerce Department Internet Policy Task Force proposed amending Section 504 to specify factors that would allow courts to consider the defendant's state of mind and financial situation, as well as the nature of the infringement.<sup>23</sup> The White Paper also proposed a modest expansion of the innocent infringer defense, allowing the defense to be asserted in cases where there is a copyright notice on the work infringed.<sup>24</sup>

---

<sup>20</sup> Notice at 77671.

<sup>21</sup> Unlocking Technology Act, H.R. 1587, 114<sup>th</sup> Cong. (2015).

<sup>22</sup> You Own Devices Act, H.R. 862, 114<sup>th</sup> Cong. (2015).

<sup>23</sup> Commerce Department White Paper at 90-92.

<sup>24</sup> *Id.* at 97.

An individual's unauthorized use or copying of software on a device may be a circumstance in which the nature of the infringement calls for a lower damage award or where the innocent infringer defense remains available. Where a user is unaware of the licensing terms restricting reverse engineering or modification of software, or where the user has a colorable fair use claim, statutory damages may result in an arbitrary or excessive award unmoored from legitimate aims of compensation or deterrence. At a minimum, courts should be allowed to consider these factors in cases of infringement related to software-enabled devices.

#### IV. Key issues in the intersection of copyright and other areas of law

**Copyright law should not distinguish between “everyday products” and other software-enabled devices.** The Office has asked whether copyright law should distinguish “between software embedded in ‘everyday products’ and other types of software.”<sup>25</sup> Such a distinction would be difficult to administer and may not benefit the development of copyright law with respect to software or devices.

This distinction would require the Office to determine which software-enabled devices are “everyday products” and which are not. That distinction does not make much sense at the outset, and is changing every day owing to pace of growth of the Internet of Things (IoT). According to the National Cable and Telecommunications Association, the number of IoT devices has grown from 500 million in 2003 to 22.9 billion in 2016.<sup>26</sup> By 2020, that number will double.<sup>27</sup>

That increase is due as much to new devices entering the stream of commerce as to growing consumer demand for them. Engadget's Best of Show for the 2006 Consumer Electronics Show included devices like portable video players, DVD players, and satellite radio devices.<sup>28</sup> Its Best of Show finalists in 2016 included drones, robotic arms, and 3D printers.<sup>29</sup> While the makers of all of these devices may hope they become “everyday products,” it unclear who is in the best position to make that determination and the determination likely will change over time.

Attempts to distinguish types of software face similar classification challenges. As we saw with the recent Heartbleed exploit of OpenSSL, the same software (and its vulnerabilities) may reside on commercial web servers as well as individual IoT devices.<sup>30</sup> Thus, software-based distinctions may

---

<sup>25</sup> Notice at 77671.

<sup>26</sup> NCTA, “Behind the Numbers: Growth in the Internet of Things,” *available at* <https://www.ncta.com/positions/internet-of-things>.

<sup>27</sup> *Id.*

<sup>28</sup> Peter Rojas, “Best of CES 2006,” Engadget (Jan. 9, 2006), *available at* <http://www.engadget.com/2006/01/09/best-of-ces-2006/>.

<sup>29</sup> Nicole Lee, “Introducing the Best of CES 2016 finalists!,” Engadget (Jan. 7, 2016), *available at* <http://www.engadget.com/2016/01/07/introducing-the-best-of-ces-2016-finalists/>.

<sup>30</sup> Shaun Nichols, “Thought Heartbleed was dead?,” The Register (Sept. 15, 2015), *available at* [http://www.theregister.co.uk/2015/09/15/still\\_200k\\_iot\\_heartbleed\\_vulns/](http://www.theregister.co.uk/2015/09/15/still_200k_iot_heartbleed_vulns/)

prove as difficult to administer as device-based ones. Copyright law should be applied consistently across software-enabled devices.

**Copyright law's intersection with contract law.** As in the context of software embedded on CD-ROMs, evasion of the exhaustion doctrine and the ability to control secondary markets create strong incentives to characterize the transfer of software embedded on a device as a license rather than a sale. At a minimum, rightsholders should ensure that any license that restricts the copying or use of software embedded on a device is prominent to the user and that its terms are easily understood.

Clarity is particularly important when licensing terms depart from reasonable consumer expectations or from limitations that would otherwise apply under copyright law. Professor Dennis Crouch characterized the YODA bill as responding in part to the way that “underlying IP rights have served as a basis for courts to favor ‘freedom of contract’ over the traditional unreasonable-restraints-of-trade doctrines.”<sup>31</sup> The more that rightsholders bring their terms in line with reasonable consumer expectations, and the easier those terms are to understand, the less courts will have to face an either/or choice when weighing these two considerations.

We note that some rightsholders already have determined that fewer restrictions on their software will make that software – and the devices that incorporate it – more valuable. After the *Oracle* decision, Rackspace’s Associate General Counsel stressed that Rackspace’s client and server APIs were open source and encouraged its customers to exercise their freedom to implement and build: “Use them, clone them, build on them – we welcome everyone to participate with us in building the open cloud.”<sup>32</sup> As much as licensing may lead us into thorny copyright questions raised by software-enabled devices, open source licensing may lead us out of them.

## Conclusion

The Center for Democracy & Technology thanks the Office for initiating this inquiry and looks forward to working with the Office and all stakeholders as its inquiry proceeds.

February 16, 2016

---

<sup>31</sup> Crouch, *supra* n.15.

<sup>32</sup> Van Lindberg, “The Copyrightability In The Land Of OpenStack,” The Rackspace Blog (May 16, 2014), available at <http://blog.rackspace.com/the-copyrightability-of-apis-in-the-land-of-openstack/>.